Giving Students a Competitive Edge with Technology
Presenters

- **Dr. Sandra DeLoatch** - Provost and Vice President for Academic Affairs, Professor of Computer Science, and Massie Chair in Information Assurance and Cyber Security

- **Dr. Adebisi Oladipupo** - Chief Information Officer and Professor of Engineering

- **Dr. Arletha McSwain** - Dean of the School of Extended Learning and Professor of Education
Innovative STEM Initiatives at NSU

Sandra J. DeLoatch, Ph.D.

Provost and Vice President for Academic Affairs
Professor of Computer Science
Massie Chair in Information Assurance and Cyber Security
Established in 1935

Three Colleges, Five Schools, 29 Academic Departments
- College of Liberal Arts
- College of Science, Engineering, and Technology
- Honors College
- School of Business
- School of Education
- School of Social Work
- School of Graduate Studies and Research
- School of Extended Learning

Degrees
- 2 associate degrees
- 30 bachelor’s degrees
- 16 masters degrees
- 3 doctoral degrees

Accredited by the Southern Association of Colleges and Schools; NSU has also earned accreditation for every eligible program
Much has been written about the need for a well-educated science and technology workforce to maintain our nation’s competitiveness.

“We are not producing, in this country, in America, enough young people going into science, technology, and engineering— the fields that are going to be essential for entrepreneurship and innovation in the 21st century.”

Thomas Friedman, *The World is Flat*

NSU’s College of Science, Engineering, and Technology (CSET) implemented a number of novel and traditional programs and practices to improve this situation.
NSU Best Practices

- Course Enhancements
- Technology-integrated Learning Environments
- Student Support Programs
  - Summer Bridge
  - Peer Tutoring
  - Mentoring
  - Outreach
- Faculty Development/Recognition Programs
- Research Initiatives
Course Enhancements

- Common syllabi, exams, and finals
- Online homework (WebAssign)
- Personal Response System (PRS)
- Reading quizzes
- Weekly mini-exams (that provide a review of weekly discussion topics)
- Hands-on problem solving using molecular models and Lego blocks
- Case study assignments
- Web enhancements
Faculty Best Practices Agreement

I, ____________________________, agree to try the “best practices” checked below to improve the retention of students in my classes during the semester and report the results (success or failure) to my department chair at midterm and at the end of the semester.

_________________________________________  ____________________________  _______________
Signature  Department  Date

☐ 1. Offer evening study sessions on _________ at _________ (AM or PM) each week.
☐ 2. Monitor student performance continuously and notify advisors of students scoring below “C” in your classes.
☐ 3. Conduct small group review or help sessions in the Tutoring Center
☐ 4. Utilize peer instruction in the classroom
☐ 5. Utilize collaborative learning in the classroom
☐ 6. Use Personal Response Systems (clickers) in the classroom
☐ 7. Prepare and use common assessments (quizzes and tests) in collaboration with my colleagues
☐ 8. Use a common syllabus for multi-section courses
☐ 9. Participate in regular group meetings for instructors of multi-section courses
☐ 10. Require students to use online homework systems
☐ 11. Use Blackboard (blended courses)
☐ 12. Check prerequisites during the first week of classes
Faculty Best Practices Agreement

☐ 13. Conduct regular attendance checks and communication with students and their advisors
☐ 14. Extend my office hours to __________ hours per week.
☐ 15. Introduce collaborative or group assignments
☐ 16. Conduct peer facilitated learning groups
☐ 17. Provide students with teacher-prepared study guides
☐ 18. Use Scantron answer sheets for detailed item analyses of tests and quizzes
☐ 19. Adjust my teaching style to student learning styles
☐ 20. Use rubrics for assignments
☐ 21. Use inquiry-based methods in the classroom
☐ 22. Reduce the use of PowerPoint lectures
☐ 23. Use more essay questions on assessments
☐ 24. (other) ________________________________________________________
☐ 25. (other) ________________________________________________________

__________________________________________  ___________________________  ______________
Signature                                      Department                                      Date
Learning Environment

- Updated classrooms and lecture rooms
- Renovated science laboratories
- Modernized computing facilities
- Created state-of-the-art instructional venues with personal response systems, etc.
Learning Environment
Summer Bridge Program

Pathway to the STARS

- Intensive 2-day Math Workshop
- Testing/mathematics placement
- Four weeks of classes on pre-calculus, science, ethics, and study skills
- Students make substantial gains in math placements and readiness for college life
Peer Tutoring Program

The Peer Tutoring Program offers individual tutoring in most science and mathematics courses and has been certified by the College Reading and Learning Association.

Peer tutors receive on-going training in areas such as study skills, note taking, and test preparation. Tutors meet weekly with professors to review topics covered in class to better assist students.

Tutoring is offered 8:00 a.m. – 8:00 p.m., Monday – Thursday and 8:00 a.m. – 5:00 p.m. on Friday.

Undergraduate students work ten hours per week

Scholarship students must volunteer for a minimum of two hours each week.

STEM faculty and graduate students provide upper division tutoring.

Data reflect that students who visit the centers regularly are generally 100% successful in their STEM courses.
Peer Mentoring Center

- Established in January 2009
- Private meeting areas and one large common area
- The Center
  - helps to socialize entering freshmen to their disciplines
  - serves as a bridge for the discipline specific learning communities
  - aids retention
- Peer mentors provide a variety of other support
Mentors participate in bonding activities and work together on:

- How Do I ........?
- Time Management
- Study Skills
- Social Community
- Facing Academic Challenges
- Importance of Internships
- Preparing For Exams
- Finances
- Internship/Employment Preparation
- Resume/Cover Letter Preparation
Peer Mentoring Results

What mentors say ...

- Experience very rewarding.
- Learned importance of networking...
- Able to give back...
- Showed them [mentees] how I [mentor] relate to their problems and successes...

What mentees say ...

- Mentor helps me identify goals...
- Mentor helps me with the attitude to persist through challenging course work...
- Mentor creates a safe environment in which I can share my mistakes and learn from them without losing respect for me...
- Mentor can relate to my experiences as a CSET student in a way that encourages me to work harder or smarter...
Outreach

Health and Science Summer Academy
- Two-week academic enrichment program for middle and high school students to encourage student interest in the sciences and health sciences

Environmental Science Program
- Two-week residential program for at-risk high school students

Saturday Scientists Academy
- Program for local high school students; students meet in NSU laboratories on Saturdays to reinforce and enhance skills in STEM fields
Outreach

Science Experiments

- CSET students help public school children learn about solids, liquids, and gases with a very popular nitrogen/ice cream experiment

Workshops for Girl Scouts

- Through a partnership with the Girl Scout Council of Colonial Coast, STEM experiences have been offered to many of the Council’s 16,000 girls
Outreach

Elementary School Summer STEM Academy

- Faculty and students helped third, fourth and fifth grade children learn about environmental, transportation, and civil engineering. Students studied local estuaries and built levitating cars, bridges, and roller coasters.
Faculty Development Workshop AGENDA
Robinson Technology Center

Tuesday, May 10, 2011
CSET
RTC 136

8:00 – 8:30 a.m. Continental Breakfast

8:30 – 9:15 a.m. Plenary Session I: CSET Update
Dr. Sandra DeLoatch, Dean CSET

9:15 – 10:00 a.m. General Session I: nanoHUB.org
Dr. Klimeck Gerhard, Director, Network for Computational Nanotechnology (NCN), Purdue University, West Lafayette, IN

The presenter will introduce nanoHUB.org and discuss its impact on research and education and suggested usage for NSU.

10:00 – 12:00 noon General Session II: What Inspires People to Learn?
Dr. William LaCourse, Chair, Department of Chemistry and Biochemistry, University of Maryland at Baltimore County

The presenter will provide an interactive presentation on how the University of Maryland at Baltimore County inspires students to learn and the nuts and bolts of conducting discovery learning for freshmen.
The Workshop is now offered campus-wide and SEL has a major role.
New STEM faculty receive release time and other support to facilitate research activities.

STEM faculty have been very successful in securing external funding to support their research initiatives and have established several centers of excellence.

CSET offers undergraduate research opportunities for students and travel support to participate in regional and national competitions.
### External Funding (Recent Major Awards)

<table>
<thead>
<tr>
<th>Agency</th>
<th>Amount</th>
<th>Title</th>
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<tbody>
<tr>
<td>NSF</td>
<td>$5.00M</td>
<td>CREST Center for Nano and Bio-inspired Materials</td>
</tr>
<tr>
<td>ONR</td>
<td>$4.70M</td>
<td>Center of Excellence in Advanced Nanomaterials and Devices</td>
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<tr>
<td>AMRMC</td>
<td>$4.20M</td>
<td>VNurse ... Virtual Simulation for Nurse Training</td>
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<tr>
<td>NSF</td>
<td>$3.23M</td>
<td>Meta-PREM-Partnership for Research &amp; Education in Materials: Partnership for Advanced Functional Metamaterials</td>
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<tr>
<td>NSF</td>
<td>$3.20M</td>
<td>IGERT in Magnetic and Nanonstructured Materials</td>
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<tr>
<td>NSF</td>
<td>$2.80M</td>
<td>Partnership for Photonic Metamaterials</td>
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<tr>
<td>NSF</td>
<td>$2.50M</td>
<td>Science &amp; Technology Academicians on the Road to Success Plus</td>
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<tr>
<td>DHHS</td>
<td>$2.46M</td>
<td>Project Vision</td>
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<td>NGIA</td>
<td>$2.30M</td>
<td>Intelligence Community – Center of Academic Excellence</td>
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<tr>
<td>NSF</td>
<td>$1.70M</td>
<td>Transitioning STEM Students to Graduation and Graduate School</td>
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<tr>
<td>DoE</td>
<td>$1.25M</td>
<td>Massie Chair of Excellence in Information Assurance and Cyber Security</td>
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<tr>
<td>NSF</td>
<td>$1.00M</td>
<td>Renewable Energy in Materials Science and Engineering</td>
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<tr>
<td>NSF</td>
<td>$957K</td>
<td>Research Study of STEM Programs for Improved Retention, ...</td>
</tr>
<tr>
<td>HUD</td>
<td>$800K</td>
<td>WoMen's Economic Development Center (WEDC)</td>
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<tr>
<td>ONR</td>
<td>$565K</td>
<td>Research &amp; Education in Development of Multifunctional Sensors &amp; MEMS</td>
</tr>
<tr>
<td>NSF</td>
<td>$532K</td>
<td>Acquisition of an Electron-Beam Lithography System for Advanced Engineering Applications and Education</td>
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</table>
Finalist for $25M National Science Foundation and Science and Technology Center Award.

In partnership with researchers at Cornell and Purdue, created the world’s smallest laser (spaser) which cannot be seen by the human eye and could produce significant medical advances by going where current technology cannot. Spasers also have possibilities in electronics, as they operate at frequencies thousands of times faster than present-day computers.

In collaboration with Purdue, created a new black material that can be used to build equipment invisible to radar.
State-of-the-art center for the research and development of game based, interactive web-based, and interactive training solutions for education, industry, and government.

CGS facilities include gaming PCs with high end 3D graphic rendering and visualization tools. Equipped with industry standard modeling, simulation, and professional software development tools.

Received $4.2 million from the U.S. Army Medical Research and Materiel Command for a Virtual Nurse (Vnurse) simulation project.
$6.5$ million state-of-the-art facility
- Class 100/1000
- 6,000 square feet
- User facility that provides unique processing capabilities (for NSU and external users)
- Only full-scale cleanroom at an HBCU
- Houses equipment that enables the deposition and etching of thin films, the patterning of devices and microstructures, and wet chemical processing
Center of Academic Excellence in Information Assurance

- NSU is one of seven Virginia Universities to receive this distinction from NSA/DHS and one of eight HBCU’s.
- Received $1,250,000 grant from the Department of Energy to support cyber security and Information Assurance (IA) initiatives.
Center for Biotechnology & Biomedical Sciences

- Established in 2005 with a $3.6M NIH grant.
- Significant work underway on the development of male anti-fertility compounds.
- Excellent infrastructure for drug discovery.
CSET Landscape, 2000 and 2011

2000

- 1,604 Students
- 1 graduate program
- 1 research center
- $6,675,365 in external funding

2011

- 2,248 Students (↑40%)
- 5 graduate programs (↑400%)
- 5 research centers
- $12,144,219 in external funding (↑82%)
- Comprehensive student support programs
- Extensive outreach activities
- Annual awards ceremony to celebrate accomplishments of faculty, staff, and alumni "stars"
- Annual faculty development workshop to introduce new pedagogies and innovations
As one wise person stated, it is insanity to expect a different future without changing what has been done in the past.

Clearly, universities must change their programs and practices if the percentage of STEM graduates is to increase.

Taken together, activities at NSU extend previous research and practice and provide some evidence for interventions that might lead to success.
Support for Distance Education

- Demonstrated Commitment
  - School of Extended Learning and the “right” dean
  - **Strategic Plan**
  - **Six-Year Plan**

- Resources, encouragement, technical assistance, and leverage (when needed)
  - Financial incentives for academic schools and colleges
  - Recognition and financial incentives for faculty

- NSU was 100% supportive of Dr. McSwain’s vision of USDLA certification for our campus
A Successful Teamwork

OIT and SEL, partners in education

Bisi Oladipupo, Sc.D. (CIO)
Extended Learning at NSU

Dr. Arleatha McSwain
Dean, School of Extended Learning
Professor of Education
The School of Extended Learning

We Get It!

Responsible for implementing pedagogical best practices that enhance student success and retention in:

- **online courses**
- **video-conferenced courses**
- **technology-rich blended courses**
Cyber Spartan

The School of Extended Learning has one goal, one passion: 100% satisfaction.
According to the Research

- The implementation of appropriate instructional technology has been shown to positively impact favorably the academic performance of today’s students who are taking online classes (Saeed, Yun & Sinnappan, 2009).

- High quality instructional design is the single most critical factor in ensuring the successful experience of a student taking an online learning (Desai, Hart, & Richards, 2008).

- An equally critical factor in distance education is that the online instructor knows how to motivate the online student so they will continue to study and enjoy learning in an online environment (Liao, 2006).
Module 1 consists of an awareness survey. Currently, 132 of the 270 Norfolk State University faculty attended an orientation session and have completed Module 1.

Module 2 is a Foundational Toolkit and centers on a) computer literacy, b) Blackboard basics c) course readiness and design, d) course content development and e) course delivery and management.

Module 3 requires faculty to complete a nationally recognized online certification program sponsored by Learning Resources Networking. The Learning Resources Network (LERN) is an international education association serving thousands of faculty in higher education and other teachers interested in online teaching.
Incentivising Your Faculty

Or, why in the world would faculty want to do this?

Faculty Portfolio/Category I Scholarly Activity

13. Receives awards or recognition in one’s area of expertise.

Category III Professional Development & Service

1. Participates in meetings, symposia, seminars, or colloquia and attends enhancement courses on or off campus.

9. Receives professional recognition through awards and honors.
Show Me the Money $

- **$1,000** per course to redesign using Quality Matters Standards
- **$400** to be a Quality Matters Peer Reviewer
- **$400** to attend the annual faculty retreat
Annual Faculty Awards Luncheon
Faculty Retreat

“Validating Your Worth ... Affirming Your Needs!”

The First Annual School of Extended Learning
Distance Education Faculty Retreat @ Sheraton
Virginia Beach Oceanfront Hotel

Title/Name (Print) ___________________________________________
Department ___________________________________________
School ___________________________________________
Email address ___________________________________________
Phone number ___________________________________________

Yes, I plan to attend  ☐
I am not able to attend  ☐

Thursday, June 6, 2013, 5:30 pm - 9:00 pm
Friday, June 7, 2013, 8:30 am - 4:30 pm

Receive HD Webcam with Perfect Attendance to all events and sessions.
Mr. Reggie Smith III - Chair Emeritus of the Board of Director for USDLA
“Transformational Potential of Distance Learning for HBCUs”

Dr. Pamela Witcher - Associate Provost for Faculty Affairs at Bridgewater State University
“Authentic Assessment: Integrating Learning with Life”

Dr. Marilyn Gardner – Program Professor at Nova Southeastern University/ Fischler School of Education
“Student Engagement: It Isn’t Like It Used to Be (or Is It?)”

Dr. Robbie Melton - Associate Vice Chancellor for Mobilization and Emerging Technologies for the Tennessee Board of Regents “Mobilization of Teaching and Learning with Mobile Devices and Apps”
In June of 2012, NSU submitted a document that demonstrated that our distance education programs met the United States Distance Learning Association Standards of Practice - Provider Prerequisites.

Once that was approved, we were required to submit a self-study which addressed 120 standards.

After the self-study was approved, the team conducted pre-visit phone interviews followed by a three-day site visit where administrators, faculty, staff, and students were interviewed. The team also toured the campus to assess our technical infrastructure and capacity.
We did it!
References


Thanks for watching...

You can do this!